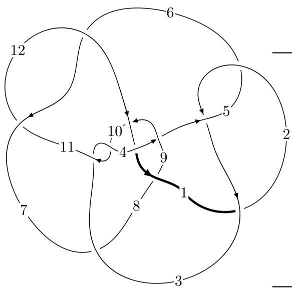
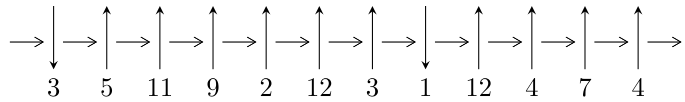
$12n_{0395}$ ($K12n_{0395}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$4,12 \xrightarrow[c_{12}]{} 1,7 \xrightarrow[c_6]{} 6 \xrightarrow[c_{11}]{} 11 \xrightarrow[c_3]{} 3 \xrightarrow[c_1]{} 2 \xrightarrow[c_5]{} 5 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_9]{} 9 \xrightarrow[c_8]{} 8 \twoheadrightarrow c_2, c_4, c_7$$

Ideals for irreducible components[2]of $X_{\mathbf{par}}$

$$I_1^u = \langle -377702541u^{18} - 368786459u^{17} + \cdots + 1560308809b + 1065050773,$$
$$509610922u^{18} + 379813420u^{17} + \cdots + 156030809a - 1049301116,\ u^{19} + u^{18} + \cdots - 3u - 1\rangle$$
$$I_2^u = \langle 1.29506 \times 10^{87}u^{39} + 1.53497 \times 10^{87}u^{38} + \cdots + 2.69800 \times 10^{88}b - 3.45877 \times 10^{88},$$
$$5.34951 \times 10^{86}u^{39} + 5.15111 \times 10^{86}u^{38} + \cdots + 2.69800 \times 10^{88}a + 9.82066 \times 10^{88},\ u^{40} + u^{39} + \cdots - 15u + 1$$
$$I_3^u = \langle -u^{10} + 29u^9 + 25u^8 - 45u^7 + 31u^6 + 58u^5 - 50u^4 + 86u^3 + 101u^2 + 47b - 20u - 11,$$
$$31u^{10} + 41u^9 - 23u^8 - 15u^7 + 26u^6 + 35u^5 + 93u^4 + 60u^3 + 65u^2 + 47a - 38u - 129,$$
$$u^{11} + u^{10} - 2u^9 + 3u^7 - u^6 + 2u^5 + 4u^4 - 2u^3 - 2u^2 + 1\rangle$$
$$I_4^u = \langle -2u^9 + u^8 + 8u^7 + 2u^6 - 15u^5 - 7u^4 + 10u^3 + 6u^2 + b - 6u - 3,$$
$$-u^9 - u^8 + 6u^7 + 5u^6 - 10u^5 - 11u^4 + 8u^3 + 8u^2 + a - 5u - 6,$$
$$u^{10} - 4u^8 - 3u^7 + 6u^6 + 7u^5 - 2u^4 - 5u^3 + u^2 + 3u + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 80 representations.

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I.
$\boldsymbol{I_1^u = \langle -3.78\times 10^8 u^{18} - 3.69\times 10^8 u^{17} + \cdots + 1.56\times 10^8 b + 1.07\times 10^9,\ 5.10\times 10^8 u^{18} + 3.80\times 10^8 u^{17} + \cdots + 1.56\times 10^8 a - 1.05\times 10^9,\ u^{19} + u^{18} + \cdots - 3u - 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -3.26609u^{18} - 2.43422u^{17} + \cdots + 14.6633u + 6.72496 \\ 2.42069u^{18} + 2.36355u^{17} + \cdots - 9.38422u - 6.82590 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -5.68678u^{18} - 4.79777u^{17} + \cdots + 24.0475u + 13.5509 \\ 2.42069u^{18} + 2.36355u^{17} + \cdots - 9.38422u - 6.82590 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 8.21607u^{18} + 4.60275u^{17} + \cdots - 30.9090u - 8.69525 \\ -0.467933u^{18} - 1.05048u^{17} + \cdots + 3.62390u + 3.61332 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2.94393u^{18} + 3.81230u^{17} + \cdots - 11.6400u - 13.6846 \\ 0.852487u^{18} - 0.589367u^{17} + \cdots - 1.92514u + 2.74496 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 4.03573u^{18} + 2.94704u^{17} + \cdots - 19.3471u - 5.85388 \\ -1.97347u^{18} - 0.834541u^{17} + \cdots + 6.74227u + 1.47324 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -3.87980u^{18} - 5.91327u^{17} + \cdots + 16.8878u + 20.9112 \\ 0.467933u^{18} + 1.05048u^{17} + \cdots - 1.62390u - 3.61332 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 8.21607u^{18} + 4.60275u^{17} + \cdots - 30.9090u - 8.69525 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 8.21607u^{18} + 4.60275u^{17} + \cdots - 31.9090u - 8.69525 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 8.68401u^{18} + 5.65323u^{17} + \cdots - 33.5329u - 12.3086 \\ 0.580147u^{18} + 0.361879u^{17} + \cdots - 1.21559u - 0.582551 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{858705183}{156030809}u^{18} - \frac{1012526591}{156030809}u^{17} + \cdots + \frac{5471923598}{156030809}u + \frac{4145235745}{156030809}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{19} + 7u^{18} + \cdots - 4u - 1$
c_2, c_5, c_6 c_{11}	$u^{19} + u^{18} + \cdots + 2u - 1$
c_3, c_{10}	$u^{19} - 11u^{18} + \cdots + 60u - 8$
c_4	$u^{19} + 12u^{18} + \cdots - 176u - 32$
c_7	$u^{19} - u^{18} + \cdots + 1133u - 517$
c_8	$u^{19} + 11u^{17} + \cdots - 7u - 13$
c_9, c_{12}	$u^{19} + u^{18} + \cdots - 3u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{19} + 23y^{18} + \cdots + 28y - 1$
c_2, c_5, c_6 c_{11}	$y^{19} + 7y^{18} + \cdots - 4y - 1$
c_3, c_{10}	$y^{19} + 3y^{18} + \cdots - 368y - 64$
c_4	$y^{19} + 8y^{18} + \cdots + 6912y - 1024$
c_7	$y^{19} - 7y^{18} + \cdots + 566093y - 267289$
c_8	$y^{19} + 22y^{18} + \cdots - 2291y - 169$
c_9, c_{12}	$y^{19} - 23y^{18} + \cdots + 9y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.043320+0.605021I$ $a=-0.095431-1.196260I$ $b=-0.072994-1.051030I$	$-3.46673-2.11998I$	$0.23396+2.61296I$
$u=-1.043320-0.605021I$ $a=-0.095431+1.196260I$ $b=-0.072994+1.051030I$	$-3.46673+2.11998I$	$0.23396-2.61296I$
$u=\ \ 1.279840+0.395378I$ $a=\ \ 0.190387-0.406271I$ $b=\ \ 0.221252-0.463223I$	$1.07628+1.45118I$	$13.08253+0.58489I$
$u=\ \ 1.279840-0.395378I$ $a=\ \ 0.190387+0.406271I$ $b=\ \ 0.221252+0.463223I$	$1.07628-1.45118I$	$13.08253-0.58489I$
$u=-0.091308+0.542033I$ $a=-0.05772-3.40851I$ $b=-0.321625-0.991324I$	$-6.77802+4.24933I$	$-2.37252-3.20470I$
$u=-0.091308-0.542033I$ $a=-0.05772+3.40851I$ $b=-0.321625+0.991324I$	$-6.77802-4.24933I$	$-2.37252+3.20470I$
$u=-0.396664+0.369740I$ $a=\ \ 1.23276+1.31882I$ $b=\ \ 0.190738+0.915706I$	$-2.12350+1.85148I$	$4.32931-4.24457I$
$u=-0.396664-0.369740I$ $a=\ \ 1.23276-1.31882I$ $b=\ \ 0.190738-0.915706I$	$-2.12350-1.85148I$	$4.32931+4.24457I$
$u=\ \ 1.49967+0.06625I$ $a=-0.574936-0.248373I$ $b=\ \ 0.819301+1.051500I$	$8.33063+6.97397I$	$8.76530-4.76080I$
$u=\ \ 1.49967-0.06625I$ $a=-0.574936+0.248373I$ $b=\ \ 0.819301-1.051500I$	$8.33063-6.97397I$	$8.76530+4.76080I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.356851+0.335765I$ $a=\ \ 1.25082+2.28548I$ $b=-0.656301-0.536511I$	$-3.49379+2.71619I$	$7.39466-0.32501I$
$u=-0.356851-0.335765I$ $a=\ \ 1.25082-2.28548I$ $b=-0.656301+0.536511I$	$-3.49379-2.71619I$	$7.39466+0.32501I$
$u=-1.56268+0.05774I$ $a=-1.259550-0.485799I$ $b=\ \ 0.975642-0.970457I$	$9.19399-6.70093I$	$9.82122+4.48583I$
$u=-1.56268-0.05774I$ $a=-1.259550+0.485799I$ $b=\ \ 0.975642+0.970457I$	$9.19399+6.70093I$	$9.82122-4.48583I$
$u=\ \ 0.315741$ $a=\ \ 1.20666$ $b=\ \ 0.408538$	0.727380	13.8820
$u=\ \ 1.68314+0.54519I$ $a=\ \ 0.259507-0.084155I$ $b=-0.986094+0.888888I$	$9.98818+1.53259I$	$10.28519+0.05847I$
$u=\ \ 1.68314-0.54519I$ $a=\ \ 0.259507+0.084155I$ $b=-0.986094-0.888888I$	$9.98818-1.53259I$	$10.28519-0.05847I$
$u=-1.66969+0.71456I$ $a=\ \ 0.950831+0.876319I$ $b=-0.87419+1.14110I$	$8.2934-15.6503I$	$8.00000+8.25494I$
$u=-1.66969-0.71456I$ $a=\ \ 0.950831-0.876319I$ $b=-0.87419-1.14110I$	$8.2934+15.6503I$	$8.00000-8.25494I$

II.

$\boldsymbol{I_2^u = \langle 1.30\times10^{87}u^{39} + 1.53\times10^{87}u^{38} + \cdots + 2.70\times10^{88}b - 3.46\times10^{88},\ 5.35\times10^{86}u^{39} + 5.15\times10^{86}u^{38} + \cdots + 2.70\times10^{88}a + 9.82\times10^{88},\ u^{40} + u^{39} + \cdots - 15u + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.0198277u^{39} - 0.0190923u^{38} + \cdots - 44.7904u - 3.63997 \\ -0.0480005u^{39} - 0.0568927u^{38} + \cdots + 0.311946u + 1.28197 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.0281728u^{39} + 0.0378004u^{38} + \cdots - 45.1024u - 4.92194 \\ -0.0480005u^{39} - 0.0568927u^{38} + \cdots + 0.311946u + 1.28197 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.536629u^{39} + 0.596877u^{38} + \cdots - 25.4262u - 5.72637 \\ -0.0756455u^{39} - 0.0881317u^{38} + \cdots + 1.50300u + 0.486117 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.458136u^{39} + 0.471790u^{38} + \cdots + 63.8377u - 7.67485 \\ -0.0990701u^{39} - 0.0884537u^{38} + \cdots - 17.1405u + 0.775723 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0573134u^{39} + 0.0688277u^{38} + \cdots + 43.4630u + 6.53740 \\ 0.0953537u^{39} + 0.101112u^{38} + \cdots + 5.88241u - 2.22024 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.638325u^{39} - 0.657958u^{38} + \cdots - 103.579u + 9.05298 \\ 0.0880767u^{39} + 0.0956592u^{38} + \cdots + 22.3476u - 0.616054 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.536629u^{39} + 0.596877u^{38} + \cdots - 25.4262u - 5.72637 \\ -0.0734017u^{39} - 0.0888770u^{38} + \cdots + 1.87009u + 0.425868 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.610031u^{39} + 0.685754u^{38} + \cdots - 27.2963u - 6.15224 \\ -0.0734017u^{39} - 0.0888770u^{38} + \cdots + 1.87009u + 0.425868 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.542040u^{39} + 0.596575u^{38} + \cdots - 24.9003u - 5.80209 \\ -0.0788525u^{39} - 0.0842106u^{38} + \cdots + 2.11993u + 0.404680 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.442497u^{39} + 0.473863u^{38} + \cdots + 3.13307u + 13.3769$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{40} + 8u^{39} + \cdots + 1381u + 121$
c_2, c_5, c_6 c_{11}	$u^{40} - 2u^{39} + \cdots + 29u + 11$
c_3, c_{10}	$(u^{20} + 5u^{19} + \cdots + 5u + 1)^2$
c_4	$(u^{20} - 5u^{19} + \cdots - 6u + 1)^2$
c_7	$u^{40} - 18u^{38} + \cdots + 26588u + 210103$
c_8	$u^{40} - 2u^{39} + \cdots - 350134u + 28487$
c_9, c_{12}	$u^{40} + u^{39} + \cdots - 15u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{40} + 40y^{39} + \cdots + 111361y + 14641$
c_2, c_5, c_6 c_{11}	$y^{40} + 8y^{39} + \cdots + 1381y + 121$
c_3, c_{10}	$(y^{20} - y^{19} + \cdots - 9y + 1)^2$
c_4	$(y^{20} - y^{19} + \cdots - 20y + 1)^2$
c_7	$y^{40} - 36y^{39} + \cdots + 252213388832y + 44143270609$
c_8	$y^{40} + 40y^{39} + \cdots - 4553546458y + 811509169$
c_9, c_{12}	$y^{40} - 33y^{39} + \cdots + 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.789817 + 0.551198I$ $a = -0.69551 + 1.55288I$ $b = 0.459315 + 1.209800I$	$-1.25686 + 2.87744I$	$8.53861 + 0.21509I$
$u = 0.789817 - 0.551198I$ $a = -0.69551 - 1.55288I$ $b = 0.459315 - 1.209800I$	$-1.25686 - 2.87744I$	$8.53861 - 0.21509I$
$u = -0.882283 + 0.194843I$ $a = -0.417404 - 0.174483I$ $b = 1.234230 + 0.246821I$	$3.22335 - 0.66671I$	$5.55879 + 11.26225I$
$u = -0.882283 - 0.194843I$ $a = -0.417404 + 0.174483I$ $b = 1.234230 - 0.246821I$	$3.22335 + 0.66671I$	$5.55879 - 11.26225I$
$u = 1.096700 + 0.080097I$ $a = -0.169582 - 0.382784I$ $b = 0.661294 + 0.316017I$	$1.73797 + 1.66833I$	$9.09788 - 4.11752I$
$u = 1.096700 - 0.080097I$ $a = -0.169582 + 0.382784I$ $b = 0.661294 - 0.316017I$	$1.73797 - 1.66833I$	$9.09788 + 4.11752I$
$u = -0.702136 + 0.452232I$ $a = 1.65697 + 0.89964I$ $b = -0.604929 + 1.075710I$	$-5.01038 - 2.16864I$	$2.33481 + 6.10094I$
$u = -0.702136 - 0.452232I$ $a = 1.65697 - 0.89964I$ $b = -0.604929 - 1.075710I$	$-5.01038 + 2.16864I$	$2.33481 - 6.10094I$
$u = -1.178690 + 0.159087I$ $a = 0.183886 + 0.503919I$ $b = -0.538174 + 0.434982I$	$-0.69886 - 4.77224I$	$8.00000 + 7.57794I$
$u = -1.178690 - 0.159087I$ $a = 0.183886 - 0.503919I$ $b = -0.538174 - 0.434982I$	$-0.69886 + 4.77224I$	$8.00000 - 7.57794I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.000670 + 0.723305I$ $a = -0.588918 - 1.139490I$ $b = 0.40494 - 1.37467I$	$-1.08479 - 6.65241I$	$8.00000 + 8.68586I$
$u = -1.000670 - 0.723305I$ $a = -0.588918 + 1.139490I$ $b = 0.40494 + 1.37467I$	$-1.08479 + 6.65241I$	$8.00000 - 8.68586I$
$u = 0.958749 + 0.984714I$ $a = -0.41472 + 1.38571I$ $b = 0.465289 + 0.991245I$	$-0.69886 + 4.77224I$	0
$u = 0.958749 - 0.984714I$ $a = -0.41472 - 1.38571I$ $b = 0.465289 - 0.991245I$	$-0.69886 - 4.77224I$	0
$u = -1.50241 + 0.07716I$ $a = -0.496444 - 0.235822I$ $b = 0.983741 + 0.983994I$	$9.17040 + 0.45837I$	0
$u = -1.50241 - 0.07716I$ $a = -0.496444 + 0.235822I$ $b = 0.983741 - 0.983994I$	$9.17040 - 0.45837I$	0
$u = 1.50669 + 0.14155I$ $a = -1.44000 - 0.34489I$ $b = 0.940968 - 0.791711I$	$9.17040 + 0.45837I$	0
$u = 1.50669 - 0.14155I$ $a = -1.44000 + 0.34489I$ $b = 0.940968 + 0.791711I$	$9.17040 - 0.45837I$	0
$u = -1.52444 + 0.02714I$ $a = 0.708019 + 0.222574I$ $b = -0.352756 + 0.830770I$	$-1.25686 + 2.87744I$	0
$u = -1.52444 - 0.02714I$ $a = 0.708019 - 0.222574I$ $b = -0.352756 - 0.830770I$	$-1.25686 - 2.87744I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.284736 + 0.328185I$ $a = -4.60209 - 1.08232I$ $b = -0.118953 + 0.502474I$	$-5.01038 + 2.16864I$	$2.33481 - 6.10094I$
$u = -0.284736 - 0.328185I$ $a = -4.60209 + 1.08232I$ $b = -0.118953 - 0.502474I$	$-5.01038 - 2.16864I$	$2.33481 + 6.10094I$
$u = 1.59822 + 0.22825I$ $a = 0.335646 - 0.321778I$ $b = -0.129954 - 0.886577I$	$1.73797 + 1.66833I$	0
$u = 1.59822 - 0.22825I$ $a = 0.335646 + 0.321778I$ $b = -0.129954 + 0.886577I$	$1.73797 - 1.66833I$	0
$u = -1.60666 + 0.21833I$ $a = 1.27939 + 0.87709I$ $b = -0.562169 + 0.793968I$	$-1.08479 - 6.65241I$	0
$u = -1.60666 - 0.21833I$ $a = 1.27939 - 0.87709I$ $b = -0.562169 - 0.793968I$	$-1.08479 + 6.65241I$	0
$u = -1.56979 + 0.64601I$ $a = 0.224170 + 0.117637I$ $b = -1.115240 - 0.763070I$	$9.55391 - 8.46488I$	0
$u = -1.56979 - 0.64601I$ $a = 0.224170 - 0.117637I$ $b = -1.115240 + 0.763070I$	$9.55391 + 8.46488I$	0
$u = 1.74383 + 0.19203I$ $a = 1.44796 + 1.25852I$ $b = -0.391026 + 0.507425I$	$3.22335 - 0.66671I$	0
$u = 1.74383 - 0.19203I$ $a = 1.44796 - 1.25852I$ $b = -0.391026 - 0.507425I$	$3.22335 + 0.66671I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.46290 + 1.79705I$ $a = 0.361971 + 0.723514I$ $b = -0.776259 + 0.727271I$	$3.67864 + 0.89894I$	0
$u = 0.46290 - 1.79705I$ $a = 0.361971 - 0.723514I$ $b = -0.776259 - 0.727271I$	$3.67864 - 0.89894I$	0
$u = 1.76739 + 0.61988I$ $a = 1.022920 - 0.802923I$ $b = -0.906801 - 1.018680I$	$9.55391 + 8.46488I$	0
$u = 1.76739 - 0.61988I$ $a = 1.022920 + 0.802923I$ $b = -0.906801 + 1.018680I$	$9.55391 - 8.46488I$	0
$u = -0.0113205 + 0.0913606I$ $a = -2.90917 - 4.34403I$ $b = 1.072060 + 0.812581I$	$3.67864 + 0.89894I$	$14.7379 - 6.8397I$
$u = -0.0113205 - 0.0913606I$ $a = -2.90917 + 4.34403I$ $b = 1.072060 - 0.812581I$	$3.67864 - 0.89894I$	$14.7379 + 6.8397I$
$u = 0.0698929 + 0.0329543I$ $a = -6.77015 - 1.38688I$ $b = 0.98494 - 1.07091I$	$2.89322 - 6.53100I$	$16.6269 + 9.9012I$
$u = 0.0698929 - 0.0329543I$ $a = -6.77015 + 1.38688I$ $b = 0.98494 + 1.07091I$	$2.89322 + 6.53100I$	$16.6269 - 9.9012I$
$u = -0.23102 + 2.12015I$ $a = 0.283053 - 0.859606I$ $b = -0.710501 - 0.983550I$	$2.89322 + 6.53100I$	0
$u = -0.23102 - 2.12015I$ $a = 0.283053 + 0.859606I$ $b = -0.710501 + 0.983550I$	$2.89322 - 6.53100I$	0

III. $\boldsymbol{I_3^u = \langle -u^{10} + 29u^9 + \cdots + 47b - 11,\ 31u^{10} + 41u^9 + \cdots + 47a - 129,\ u^{11} + u^{10} + \cdots - 2u^2 + 1 \rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.659574u^{10} - 0.872340u^9 + \cdots + 0.808511u + 2.74468 \\ 0.0212766u^{10} - 0.617021u^9 + \cdots + 0.425532u + 0.234043 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.680851u^{10} - 0.255319u^9 + \cdots + 0.382979u + 2.51064 \\ 0.0212766u^{10} - 0.617021u^9 + \cdots + 0.425532u + 0.234043 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.170213u^{10} - 1.06383u^9 + \cdots + 0.595745u + 0.127660 \\ 0.191489u^{10} + 0.446809u^9 + \cdots - 1.17021u - 0.893617 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -2.04255u^{10} - 2.76596u^9 + \cdots + 4.14894u + 1.53191 \\ 0.106383u^{10} - 0.0851064u^9 + \cdots - 0.872340u + 0.170213 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2.17021u^{10} - 3.06383u^9 + \cdots + 0.595745u + 3.12766 \\ 0.744681u^{10} + 0.404255u^9 + \cdots - 1.10638u - 0.808511 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1.65957u^{10} + 1.87234u^9 + \cdots - 3.80851u + 0.255319 \\ 0.191489u^{10} + 0.446809u^9 + \cdots + 0.829787u - 0.893617 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.170213u^{10} - 1.06383u^9 + \cdots + 0.595745u + 0.127660 \\ -u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.170213u^{10} - 1.06383u^9 + \cdots + 1.59574u + 0.127660 \\ -u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.361702u^{10} - 1.51064u^9 + \cdots + 0.765957u + 1.02128 \\ 0.340426u^{10} + 0.127660u^9 + \cdots - 1.19149u - 0.255319 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= \frac{69}{47}u^{10} - \frac{168}{47}u^9 - \frac{315}{47}u^8 + \frac{379}{47}u^7 + \frac{117}{47}u^6 - \frac{524}{47}u^5 + \frac{254}{47}u^4 - \frac{388}{47}u^3 - \frac{906}{47}u^2 + \frac{111}{47}u + \frac{524}{47}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} - 5u^{10} + \cdots - 5u + 1$
c_2, c_6	$u^{11} + u^{10} + 3u^9 + 2u^8 + 5u^7 + 3u^6 + 5u^5 + 3u^4 + 3u^3 + 3u^2 + u + 1$
c_3	$u^{11} - 4u^{10} + \cdots + u - 1$
c_4	$u^{11} + u^{10} + 5u^9 + 4u^8 + 7u^7 + 4u^6 + u^5 + u^4 - 2u^3 + 2u^2 + 1$
c_5, c_{11}	$u^{11} - u^{10} + 3u^9 - 2u^8 + 5u^7 - 3u^6 + 5u^5 - 3u^4 + 3u^3 - 3u^2 + u - 1$
c_7	$u^{11} + u^{10} + 2u^9 + 3u^7 + 9u^6 + 9u^5 + 9u^4 + 4u^3 + 6u^2 + 2u - 5$
c_8	$u^{11} + 2u^8 - 13u^6 - 6u^5 + 10u^4 - 6u^3 + 8u^2 + 28u - 1$
c_9, c_{12}	$u^{11} + u^{10} - 2u^9 + 3u^7 - u^6 + 2u^5 + 4u^4 - 2u^3 - 2u^2 + 1$
c_{10}	$u^{11} + 4u^{10} + \cdots + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11}+5y^{10}+\cdots+7y-1$
c_2, c_5, c_6 c_{11}	$y^{11}+5y^{10}+\cdots-5y-1$
c_3, c_{10}	$y^{11}+4y^{10}+\cdots+9y-1$
c_4	$y^{11}+9y^{10}+\cdots-4y-1$
c_7	$y^{11}+3y^{10}+\cdots+64y-25$
c_8	$y^{11}-16y^{8}+\cdots+800y-1$
c_9, c_{12}	$y^{11}-5y^{10}+\cdots+4y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.194813 + 1.083600I$ $a = -0.188300 - 0.835649I$ $b = 0.798763 - 1.016830I$	$2.21482 - 6.23543I$	$4.17349 + 4.51231I$
$u = 0.194813 - 1.083600I$ $a = -0.188300 + 0.835649I$ $b = 0.798763 + 1.016830I$	$2.21482 + 6.23543I$	$4.17349 - 4.51231I$
$u = -1.23629$ $a = -0.757555$ $b = 0.786378$	3.42447	12.2680
$u = 1.117710 + 0.686847I$ $a = -0.73823 + 1.39930I$ $b = 0.332169 + 1.072400I$	$-3.10454 + 5.87057I$	$1.19665 - 6.91999I$
$u = 1.117710 - 0.686847I$ $a = -0.73823 - 1.39930I$ $b = 0.332169 - 1.072400I$	$-3.10454 - 5.87057I$	$1.19665 + 6.91999I$
$u = 0.636137 + 0.234541I$ $a = 2.56547 - 1.10753I$ $b = -0.431158 - 1.012670I$	$-5.96203 + 4.88129I$	$4.96418 - 7.44610I$
$u = 0.636137 - 0.234541I$ $a = 2.56547 + 1.10753I$ $b = -0.431158 + 1.012670I$	$-5.96203 - 4.88129I$	$4.96418 + 7.44610I$
$u = -0.471226 + 0.455107I$ $a = 2.42243 + 0.72141I$ $b = -0.684227 + 0.713438I$	$-3.58964 - 3.66617I$	$5.73651 + 8.18144I$
$u = -0.471226 - 0.455107I$ $a = 2.42243 - 0.72141I$ $b = -0.684227 - 0.713438I$	$-3.58964 + 3.66617I$	$5.73651 - 8.18144I$
$u = -1.359290 + 0.343110I$ $a = 0.317420 + 0.120454I$ $b = 0.091264 + 0.708132I$	$0.50447 - 1.50110I$	$-1.70486 + 0.65760I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.359290 - 0.343110I$		
$a = 0.317420 - 0.120454I$	$0.50447 + 1.50110I$	$-1.70486 - 0.65760I$
$b = 0.091264 - 0.708132I$		

IV.

$\boldsymbol{I_4^u = \langle -2u^9 + u^8 + \cdots + b - 3,\ -u^9 - u^8 + \cdots + a - 6,\ u^{10} - 4u^8 + \cdots + 3u + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^9 + u^8 - 6u^7 - 5u^6 + 10u^5 + 11u^4 - 8u^3 - 8u^2 + 5u + 6 \\ 2u^9 - u^8 - 8u^7 - 2u^6 + 15u^5 + 7u^4 - 10u^3 - 6u^2 + 6u + 3 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^9 + 2u^8 + 2u^7 - 3u^6 - 5u^5 + 4u^4 + 2u^3 - 2u^2 - u + 3 \\ 2u^9 - u^8 - 8u^7 - 2u^6 + 15u^5 + 7u^4 - 10u^3 - 6u^2 + 6u + 3 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 3u^9 - 2u^8 - 11u^7 - 2u^6 + 21u^5 + 9u^4 - 14u^3 - 9u^2 + 9u + 4 \\ -3u^9 + 2u^8 + 11u^7 + u^6 - 19u^5 - 8u^4 + 12u^3 + 7u^2 - 7u - 5 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -4u^9 + u^8 + 16u^7 + 8u^6 - 27u^5 - 22u^4 + 15u^3 + 17u^2 - 9u - 9 \\ -u^9 + u^8 + 3u^7 - 6u^5 - u^4 + 4u^3 + u^2 - 3u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^9 - u^8 - 3u^7 + u^6 + 5u^5 - 2u^4 - 3u^3 + 3u^2 + 4u \\ -u^9 + 4u^7 + 3u^6 - 7u^5 - 6u^4 + 4u^3 + 4u^2 - 3u - 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^9 + u^8 - 5u^7 - 6u^6 + 6u^5 + 13u^4 - u^3 - 8u^2 + 5 \\ 2u^9 - u^8 - 8u^7 - 2u^6 + 15u^5 + 7u^4 - 10u^3 - 6u^2 + 7u + 3 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 3u^9 - 2u^8 - 11u^7 - 2u^6 + 21u^5 + 9u^4 - 14u^3 - 9u^2 + 9u + 4 \\ -2u^9 + u^8 + 8u^7 + u^6 - 13u^5 - 6u^4 + 8u^3 + 4u^2 - 4u - 3 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 5u^9 - 3u^8 - 19u^7 - 3u^6 + 34u^5 + 15u^4 - 22u^3 - 13u^2 + 13u + 7 \\ -2u^9 + u^8 + 8u^7 + u^6 - 13u^5 - 6u^4 + 8u^3 + 4u^2 - 4u - 3 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 4u^9 - 2u^8 - 16u^7 - 4u^6 + 30u^5 + 15u^4 - 21u^3 - 14u^2 + 13u + 7 \\ -u^9 + u^8 + 3u^7 - 5u^5 - 2u^4 + 2u^3 + 2u^2 - 2u - 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= -10u^9 + 2u^8 + 44u^7 + 12u^6 - 72u^5 - 40u^4 + 48u^3 + 24u^2 - 28u - 11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{10} - 5u^9 + \cdots - 5u + 1$
c_2, c_6	$u^{10} + u^9 + 3u^8 + 3u^7 + 5u^6 + 5u^5 + 5u^4 + 3u^3 + 3u^2 + u + 1$
c_3	$(u^5 + 2u^4 + 3u^3 + 2u^2 - 1)^2$
c_4	$(u^5 + 2u^3 + u^2 + 1)^2$
c_5, c_{11}	$u^{10} - u^9 + 3u^8 - 3u^7 + 5u^6 - 5u^5 + 5u^4 - 3u^3 + 3u^2 - u + 1$
c_7	$u^{10} - 3u^9 + \cdots - 10u + 5$
c_8	$u^{10} - u^9 - u^8 - 5u^7 + 8u^6 + 2u^5 + 14u^4 + u^3 + u^2 - 2u + 1$
c_9, c_{12}	$u^{10} - 4u^8 - 3u^7 + 6u^6 + 7u^5 - 2u^4 - 5u^3 + u^2 + 3u + 1$
c_{10}	$(u^5 - 2u^4 + 3u^3 - 2u^2 + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{10} + y^9 + 9y^8 + 9y^7 + 41y^6 + 33y^5 + 41y^4 + 9y^3 + 9y^2 + y + 1$
c_2, c_5, c_6 c_{11}	$y^{10} + 5y^9 + \cdots + 5y + 1$
c_3, c_{10}	$(y^5 + 2y^4 + y^3 + 4y - 1)^2$
c_4	$(y^5 + 4y^4 + 4y^3 - y^2 - 2y - 1)^2$
c_7	$y^{10} + 5y^9 + \cdots + 60y + 25$
c_8	$y^{10} - 3y^9 + \cdots - 2y + 1$
c_9, c_{12}	$y^{10} - 8y^9 + \cdots - 7y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.804770 + 0.681218I$ $a = -0.35218 - 1.55295I$ $b = 0.364273 - 1.189650I$	$-1.84330 - 3.45949I$	$1.65571 + 6.38968I$
$u = -0.804770 - 0.681218I$ $a = -0.35218 + 1.55295I$ $b = 0.364273 + 1.189650I$	$-1.84330 + 3.45949I$	$1.65571 - 6.38968I$
$u = 0.723111 + 0.479695I$ $a = 2.48698 - 0.74114I$ $b = -0.386380 - 0.716912I$	$-4.86920 - 1.42206I$	$4.77727 - 3.18139I$
$u = 0.723111 - 0.479695I$ $a = 2.48698 + 0.74114I$ $b = -0.386380 + 0.716912I$	$-4.86920 + 1.42206I$	$4.77727 + 3.18139I$
$u = -1.011490 + 0.575037I$ $a = -0.444488 + 0.494221I$ $b = 0.869336 + 0.494221I$	3.55538	$14.13404 + 0.I$
$u = -1.011490 - 0.575037I$ $a = -0.444488 - 0.494221I$ $b = 0.869336 - 0.494221I$	3.55538	$14.13404 + 0.I$
$u = -0.529451 + 0.225672I$ $a = 2.29081 + 1.05667I$ $b = -0.582553 + 1.080900I$	$-4.86920 - 1.42206I$	$4.77727 - 3.18139I$
$u = -0.529451 - 0.225672I$ $a = 2.29081 - 1.05667I$ $b = -0.582553 - 1.080900I$	$-4.86920 + 1.42206I$	$4.77727 + 3.18139I$
$u = 1.62260 + 0.17621I$ $a = -0.481126 - 0.405232I$ $b = 0.235324 - 0.768526I$	$-1.84330 + 3.45949I$	$1.65571 - 6.38968I$
$u = 1.62260 - 0.17621I$ $a = -0.481126 + 0.405232I$ $b = 0.235324 + 0.768526I$	$-1.84330 - 3.45949I$	$1.65571 + 6.38968I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{10}-5u^9+\cdots-5u+1)(u^{11}-5u^{10}+\cdots-5u+1)$ $\cdot(u^{19}+7u^{18}+\cdots-4u-1)(u^{40}+8u^{39}+\cdots+1381u+121)$
c_2, c_6	$(u^{10}+u^9+3u^8+3u^7+5u^6+5u^5+5u^4+3u^3+3u^2+u+1)$ $\cdot(u^{11}+u^{10}+3u^9+2u^8+5u^7+3u^6+5u^5+3u^4+3u^3+3u^2+u+1)$ $\cdot(u^{19}+u^{18}+\cdots+2u-1)(u^{40}-2u^{39}+\cdots+29u+11)$
c_3	$((u^5+2u^4+3u^3+2u^2-1)^2)(u^{11}-4u^{10}+\cdots+u-1)$ $\cdot(u^{19}-11u^{18}+\cdots+60u-8)(u^{20}+5u^{19}+\cdots+5u+1)^2$
c_4	$(u^5+2u^3+u^2+1)^2$ $\cdot(u^{11}+u^{10}+5u^9+4u^8+7u^7+4u^6+u^5+u^4-2u^3+2u^2+1)$ $\cdot(u^{19}+12u^{18}+\cdots-176u-32)(u^{20}-5u^{19}+\cdots-6u+1)^2$
c_5, c_{11}	$(u^{10}-u^9+3u^8-3u^7+5u^6-5u^5+5u^4-3u^3+3u^2-u+1)$ $\cdot(u^{11}-u^{10}+3u^9-2u^8+5u^7-3u^6+5u^5-3u^4+3u^3-3u^2+u-1)$ $\cdot(u^{19}+u^{18}+\cdots+2u-1)(u^{40}-2u^{39}+\cdots+29u+11)$
c_7	$(u^{10}-3u^9+\cdots-10u+5)$ $\cdot(u^{11}+u^{10}+2u^9+3u^7+9u^6+9u^5+9u^4+4u^3+6u^2+2u-5)$ $\cdot(u^{19}-u^{18}+\cdots+1133u-517)$ $\cdot(u^{40}-18u^{38}+\cdots+26588u+210103)$
c_8	$(u^{10}-u^9-u^8-5u^7+8u^6+2u^5+14u^4+u^3+u^2-2u+1)$ $\cdot(u^{11}+2u^8-13u^6-6u^5+10u^4-6u^3+8u^2+28u-1)$ $\cdot(u^{19}+11u^{17}+\cdots-7u-13)(u^{40}-2u^{39}+\cdots-350134u+28487)$
c_9, c_{12}	$(u^{10}-4u^8-3u^7+6u^6+7u^5-2u^4-5u^3+u^2+3u+1)$ $\cdot(u^{11}+u^{10}-2u^9+3u^7-u^6+2u^5+4u^4-2u^3-2u^2+1)$ $\cdot(u^{19}+u^{18}+\cdots-3u-1)(u^{40}+u^{39}+\cdots-15u+1)$
c_{10}	$((u^5-2u^4+3u^3-2u^2+1)^2)(u^{11}+4u^{10}+\cdots+u+1)$ $\cdot(u^{19}-11u^{18}+\cdots+60u-8)(u^{20}+5u^{19}+\cdots+5u+1)^2$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{10}+y^9+9y^8+9y^7+41y^6+33y^5+41y^4+9y^3+9y^2+y+1)$ $\cdot(y^{11}+5y^{10}+\cdots+7y-1)(y^{19}+23y^{18}+\cdots+28y-1)$ $\cdot(y^{40}+40y^{39}+\cdots+111361y+14641)$
c_2, c_5, c_6 c_{11}	$(y^{10}+5y^9+\cdots+5y+1)(y^{11}+5y^{10}+\cdots-5y-1)$ $\cdot(y^{19}+7y^{18}+\cdots-4y-1)(y^{40}+8y^{39}+\cdots+1381y+121)$
c_3, c_{10}	$((y^5+2y^4+y^3+4y-1)^2)(y^{11}+4y^{10}+\cdots+9y-1)$ $\cdot(y^{19}+3y^{18}+\cdots-368y-64)(y^{20}-y^{19}+\cdots-9y+1)^2$
c_4	$((y^5+4y^4+4y^3-y^2-2y-1)^2)(y^{11}+9y^{10}+\cdots-4y-1)$ $\cdot(y^{19}+8y^{18}+\cdots+6912y-1024)(y^{20}-y^{19}+\cdots-20y+1)^2$
c_7	$(y^{10}+5y^9+\cdots+60y+25)(y^{11}+3y^{10}+\cdots+64y-25)$ $\cdot(y^{19}-7y^{18}+\cdots+566093y-267289)$ $\cdot(y^{40}-36y^{39}+\cdots+252213388832y+44143270609)$
c_8	$(y^{10}-3y^9+\cdots-2y+1)(y^{11}-16y^8+\cdots+800y-1)$ $\cdot(y^{19}+22y^{18}+\cdots-2291y-169)$ $\cdot(y^{40}+40y^{39}+\cdots-4553546458y+811509169)$
c_9, c_{12}	$(y^{10}-8y^9+\cdots-7y+1)(y^{11}-5y^{10}+\cdots+4y-1)$ $\cdot(y^{19}-23y^{18}+\cdots+9y-1)(y^{40}-33y^{39}+\cdots+5y+1)$